

Moyers ("Moyers") in view of U.S. Patent No. 5,257,014 to Zimmerman ("Zimmerman"). Claims 1-7 further were rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative as obvious under 35 U.S.C. § 103(a) over U.S. Patent No. 5,109,885 to Tauscher ("Tauscher").

I. The § 112 Rejections And Objection  
To The Specification Should Be Withdrawn

With respect to paragraph four (4) of the Office Action, claims 1-7 were rejected under the enablement provision of the first paragraph of 35 U.S.C. § 112. Specifically, the Office Action asserts that "[t]he second step of claim 1 ('determining a switching instant') has not been described in the specification. It is respectfully submitted that a person having ordinary skill in the art would understand determining a switching instant based on the specification, the claims and the drawings. It is therefore respectfully submitted that claim 1-7 are enabled by the present application with respect to this limitation as it would be understood by a person having ordinary skill in the art.

As regards claims 1-7 as presented, it is believed and respectfully submitted that the Office Action's present assertions and arguments reflect the subjective beliefs of the Examiner, and therefore simply do not reflect the proper standard for determining whether a patent application complies with the enablement requirement that the specification describe how to make and use an invention that is defined by the claims. (See M.P.E.P. § 2164 (even if a claim feature does "lack descriptive support in the disclosure", this does not mean that the feature is not enabled; a claim feature "in and of itself may enable one skilled in the art to make and use the claim containing" the claim feature).

This standard may not be based on the subjective beliefs of an examiner, but must be based on reasonable arguments that are supported by proper evidence. The Supreme Court established the appropriate standard as requiring the establishment by proper evidence of whether *any experimentation for practicing the invention was undue or unreasonable*. (See M.P.E.P. § 2164.01 (citing Mineral Separation v. Hyde, 242 U.S. 261, 270 (1916); In re Wands, 858 F.2d 731, 737, 8 U.S.P.Q.2d 1400, 1404 (Fed Cir. 1988))). Thus, the enablement test is whether "one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art *without undue experimentation*." (See id. (citing United States v. Teletronics, Inc., 857 F.2d 778, 785, 8

U.S.P.Q.2d 1217, 1223 (Fed. Cir. 1988))).

The Federal Circuit has also stated that there are many factors to be considered in determining whether a specification satisfies the enablement requirement. These factors include but are not limited to the following: the breadth of the claims; the nature of the invention; the state of the prior art; the level of ordinary skill; the level of predictability in the art; the amount of direction provided by the inventor; the existence of working examples; and the quantity of experimentation needed to make or use the invention based on the disclosure. (See id. (citing In re Wands, 858 F.2d at 737, 8 U.S.P.Q.2d at 1404 and 1407)). The Federal Circuit has further stated that it is “*improper* to conclude that a disclosure is not enabling based on an analysis of only one of the above factors,” and that an examiner’s analysis must “consider all the evidence related to each of these factors” so that any nonenablement conclusion “must be based on the evidence as a whole.” (See M.P.E.P. § 2164.01).

Moreover, to reject the claims as not being enabling, an examiner bears the initial burden of establishing exactly why the “scope of protection provided by a claim is not adequately enabled by the disclosure.” (See id. (citing In re Wright, 999 F.2d 1557, 1562, 27 U.S.P.Q.2d 1510, 1513 (Fed. Cir. 1993))). Accordingly, a specification that teaches the manner and process of making and using an invention in terms that correspond in scope to those used in describing and defining the claimed subject matter complies with the enablement requirement. (See id.)

In particular, to properly establish enablement or non-enablement, the Office must make use of proper evidence, sound scientific reasoning and the established law. In the case of Ex Parte Reese, 40 U.S.P.Q.2d 1221 (Bd. Pat. App. & Int. 1996), a patent examiner rejected (under the first paragraph of section 112) application claims because they were based on an assertedly non-enabling disclosure, and was promptly reversed because the rejection was based only on the examiner’s subjective belief that the specification was not enabling as to the claims. In particular, the examiner’s subjective belief was simply not supported by any “evidence or sound scientific reasoning” and therefore ignored recent case law -- which makes plain that an examiner (and not an applicant) bears the burden of persuasion on an enablement rejection.

More particularly, the examiner in Ex parte Reese was reversed because the rejection had only been based on a conclusory statement that the specification did not contain a

sufficiently explicit disclosure to enable a person to practice the claimed invention without exercising undue experimentation -- which the Board found to be merely a conclusory statement that only reflected the subjective and unsupported beliefs of a particular examiner and that was not supported by any proper evidence, facts or scientific reasoning. (See *id.*). Moreover, the Board made clear that it is “incumbent upon the Patent Office . . . to back up assertions of its own with acceptable evidence”, and also made clear that “[where an] examiner’s ‘Response to Argument’ is not supported by evidence, facts or sound scientific reasoning, [then an] examiner has not established a *prima facie* case of lack of enablement under 35 U.S.C. § 112, first paragraph.” (See *id.* at 1222 & 1223; italics in original). Here, it has not even been conclusorily asserted that undue experimentation would be required.

In view of all of the foregoing, it is believed and respectfully submitted that the Office Action’s arguments and assertions do not satisfy the proper evidentiary and judicial standards discussed above. For example, the arguments and assertions presented do not in any way address the established and fundamental law on enablement since they do not relate the scope of the claims to the specification to determine whether the specification is enabling, nor do they properly address the enablement factors. In short, the Office Action’s rejections do not address the proper issue of *whether one having ordinary skill in the art would have to unduly experiment to practice the claimed subject matter of the rejected claims* -- a proposition for which the Office simply has not carried its burden of proving a *prima facie* case.

In this regard, it is also noted that the specification states the following:

It is important that the current characteristic has a break and/or a discontinuity at switching instant tBIP. This break is usually detected by current analysis. Times t3 and t4 define a time window within which the switching instant is detected. Switching means 110 is in its closed state within the time window. During the time window, which is defined by times t3 and t4, consumer 100 receives power supply voltage Ubat and the time curve of the current is analyzed to determine the switching time . . . The limits for time window t3 and t4 are preferably defined on the basis of switching instant tBIP of the preceding control and width B of the time window.

It is therefore respectfully submitted determining a switching instant would be understood by a practitioner skilled in the art and that the enablement rejections of claims 1 to 7 should be withdrawn based on all of the foregoing.

Claims 7 also stands rejected under 35 U.S.C. § 112, first paragraph. With respect to this rejection, the Examiner contests that “[t]here was no ‘control arrangement’ disclosed in the application as filed.” Referring to FIG. 1, the specification states the following:

A first terminal of a consumer 100 is connected to a power supply Ubat, and the second terminal of consumer 100 is connected to switching means 110. The second terminal of switching means 110 is connected to the first terminal of a current measuring means 120. The second terminal of the current measuring means is connected to ground. The terminals of consumer 100 and the terminals of current measuring means 120 send signals to a control unit 130, which in turn sends a control signal A to switching means 110.

Switching means 110 is implemented preferably in the form of a transistor, in particular a field effect transistor. Current measuring means 120 is preferably designed as an ohmic resistor. Consumer 100 is preferably the coil of a solenoid valve which is used to meter fuel.

It is respectfully submitted that a person having ordinary skill in the art would understand the control arrangement as referring to the control unit, based on the specification, the claims and the drawings.

It is therefore respectfully submitted that claim 1-7 are enabled by the present application with respect to this limitation as it would be understood by a person having ordinary skill in the art.

With respect to paragraph five (5) of the Office Action, claim 7 was rejected under the first paragraph of 35 U.S.C. § 112 as lacking adequate written description.

In this regard, the Office Action wrongly asserts that a “control arrangement” was not disclosed in the application, and is therefore new matter. As explained above, however, the control arrangement is the control unit referred to in the specification. If, however, it would facilitate matter, claim 7 can be rewritten to recite a “control unit”, and not a “control arrangement”.

As further regards the written description and/or new matter rejections of claim 7, the following is respectfully submitted:

To the extent that the rejections of any of claims 1 to 7 concern the written description requirement, it is respectfully submitted that the Office Action has not satisfied the Office’s

*initial* burden of presenting “evidence or reasons *why* persons skilled in the art would not recognize in an applicant’s disclosure a description of the invention defined by the claims.” (See M.P.E.P. § 2163.04 (citing In re Wertheim 541 F.2d 257, 262, 265, 191 U.S.P.Q. 90, 96, 98 (C.C.P.A. 1976))) (emphasis added).

Indeed, the Manual of Patent Examining Procedure itself provides that if an examiner rejects a claim based on the lack of a written description, the examiner should “identify the claim limitation not described” *and provide* “reasons why persons skilled in the art would not recognize the description of this limitation in the disclosure of the application.” (See id.). It is respectfully submitted that the Office Action’s arguments and assertions simply do not identify why rejected claim 7 is not supported by the written description of the present application -- which it plainly is, as explained herein.

As stated by the Board in Ex parte Harvey, 3 U.S.P.Q. 2d 1626, 1627 (Bd. Pat. App. Int. 1986) (emphasis added, citations omitted):

Compliance with the written description requirement of Section 112 only requires that appellant’s application contain sufficient disclosure, *expressly or inherently*, to make it clear to persons skilled in the art that appellant possessed the subject matter claimed. The test for determining compliance with the written description requirement is whether the disclosure of the application as originally filed reasonably conveys to the artisan that the inventor had possession of the claimed subject matter, *rather than the presence or absence of literal support in the specification for the claimed language.*

Likewise, as stated by the Board in Ex parte Sorenson, 3 U.S.P.Q. 2d 1462, 1463 (Bd. Pat. App. Int. 1987) (emphasis added):

[W]e are mindful that appellant’s specification need not describe the claimed invention in *ipsis verbis* to comply with the written description requirement. *The test is whether the originally filed specification disclosure reasonably conveys to a person having ordinary skill that applicant had possession of the subject matter later claimed. . . .* Moreover, the Examiner has the initial burden of presenting evidence or reasons why persons skilled in the art would not recognize in appellant’s specification disclosure a description of the invention defined by the claims.

In particular, the Sorenson Board, noting that the examiner only essentially stated that

the claim expressions at issue did not “appear in the original disclosure” and that the claim expressions were therefore “not adequately supported by the few specific compounds in the specification”, found that the examiner had not met his initial burden of “presenting evidence why a person having ordinary skill in the art would not recognize in appellant’s specification a description of the invention defined by the claims” -- and that the “only reasoning presented” that the Board could discern was an “example of *ipse dixit* reasoning, resting on a bare assertion by the Examiner”. In fact, in Sorenson, although the appellant originally used the term “copper complexes” of “amines”, rather than “imines”, the Board found that the skilled artisan would have understood such an *inadvertent error* and that “copper complexes of imines” was intended, which is not unlike the present case.

In view of all of the foregoing, it is respectfully submitted that the Office Action’s arguments and assertions do not satisfy the evidentiary and judicial standards discussed above, and it is respectfully submitted that the Office Action does not establish a prima facie written description case with respect to the present application. It is therefore respectfully submitted that the present application does satisfy the written description requirement of 35 U.S.C. § 112, especially in view of the further discussions herein as to the enablement and new matter rejections. Accordingly, it is respectfully submitted that the “written description” rejection of the presently rejected claim 7 should be reversed.

Also, it is respectfully submitted that the Office Action asserts an exceedingly literalistic and therefore limiting “in haec verba” view of the “new matter” doctrine that is inconsistent with the relevant law defining that doctrine. In the case of *Chemcast Corp. v. Arco Ind. Corp.*, 5 U.S.P.Q.2d 1225, 1237 (E.D. Mich. 1987), the court made plain that:

New matter is matter involving a departure from or in addition to the original disclosure, 37 CFR §1.118. . . . *New matter is not introduced by amendments . . . which merely clarify or make definite that which was expressly or inherently disclosed in the parent application* or which conform the specification to matter originally disclosed in the drawings or claims. . . . *Added subject matter is not new matter when it is “something that might fairly be deduced from the original application.”*

(Quoting *Stearn v. Superior Distributing Co.*, 674 F.2d 539, 544, 215 U.S.P.Q. 1089, 1093 (6th Cir. 1982) (citations omitted)). That is the case here since, in the present case, the present use of the “control arrangement” (instead of “control unit”) cannot and does not

represent new matter because there is plain and unequivocal support for control arrangement in the present application, as explained above.

Finally, a new matter rejection is tantamount to a written description rejection, and it is therefore respectfully submitted that the Office must support such a rejection based on like evidence and not subjective or conclusory statements -- especially where the Applicant has clearly shown that the amendment is not new matter and is fully supported by the present application. (*See In re Hogan and Bands*, 194 U.S.P.Q. 527, 539 (C.C.P.A. 1977)) (new matter is not presented when a person having ordinary skill in the art would reasonably conclude that a written description of the claimed subject matter is provided, *even though such support does not literally correspond to the claims*). The proper standard to support a written description rejection is discussed above.

It is therefore respectfully requested that the written description and/or new matter rejection be withdrawn.

With respect to paragraph six (6) of the Office Action, claims 1-7 were rejected under 35 U.S.C. § 112, second paragraph, as indefinite. With respect to these rejections, the Office Action asserts that “[t]he second step of claim 1 (‘determining a switching instant . . .’) has not been described in the specification in any detail.” These rejections should be withdrawn for the reasons stated above, including as to claim 7, with respect to the control arrangement or control unit.

## II. The § 102 And § 103 Rejections Should Be Withdrawn

Claims 1-7 were rejected under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 6,017,017 to Lutz (“Lutz”). To render a claim anticipated under § 102, a single prior art reference must disclose each and every element of the claim in exactly the same way. *See Lindeman Maschinenfabrik v. Am Hoist and Derrick*, 730 F.2d 1452, 1458 (Fed. Cir. 1984).

Claim 1 recites a method of activating an electromagnetic consumer having a movable element, the electromagnetic consumer including a solenoid valve for controlling a metering of fuel into an internal combustion engine, comprising the steps of:

**determining a duration of a time window such that a current flowing through the consumer during the time window does not exceed a threshold value; and**

**determining a switching instant at which the movable element has reached a particular position within the time window.**

(Emphasis added).

An object of the claimed subject matter is to define a suitable duration of the time window within which the switching instant is detected with a method and device for activating an electromagnetic consumer. The time window should be large enough for the switching instant to be detected. On the other hand, the time window should be small enough so that there is no current rise to unacceptable levels and so that the output stage is not disconnected. Disconnection of the output stage current during detection of the switching instant is avoided through the procedure according to the claimed subject matter. The time window within which the switching instant is detected is defined in such a way that detection of the switching instant is possible, yet, the current does not rise to unacceptably high levels.

A time window within which switching means 110 is constantly in a closed state begins at time  $t_3$ . This results in a current rise. A movable element reaches its new end position at time  $t_{BIP}$  because of the magnetic force. This results in a change in the consumer's inductance, which then causes a change in the current rise. The time window ends at time  $t_4$ . It is important that the current characteristic has a break and/or a discontinuity at switching instant  $t_{BIP}$ . This break may be detected by current analysis.

One problem is that switching means 110 is closed constantly during time  $t_3$  to  $t_4$ . Therefore, the current rises very steeply in this period of time with a low ohmic resistance of consumer 100. This can lead to the maximum allowed current value being exceeded and the output stage being disconnected -- that is, switching means 110 is permanently open.

Times  $t_3$  and  $t_4$  define a time window within which the switching instant is detected. Switching means 110 is in its closed state within the time window. Switching instant  $t_{BIP}$  is detected by analysis of the current curve within the time window. During the time window, window, which is defined by times  $t_3$  and  $t_4$ , consumer 100 receives power supply voltage  $U_{bat}$  and the time curve of the current is analyzed to determine the switching time.

In contrast the Lutz reference is directed to a method for recognizing the state of a solenoid valve. In particular, Lutz attempts to address a particular limitation of a solenoid valve, namely implementation in an environment subject to mechanical shock. According to Lutz, the nominal current must be set conservatively -- that is, at a higher than minimal level



if the solenoid valve is located in an area exposed to mechanical shock and vibration. This type of environment may cause a holding armature to drop off accidentally, causing the solenoid valve to shut off (or on) a pressure medium. In Lutz, a solenoid valve MV is powered by a switching regulator SR in an on/off control. Switching regulator SR receives its power from supply voltage  $U_B$  and provides an alternating (switching) coil current  $i$  through the coil winding of solenoid valve MV. An electronic system E serves to control switching regulator SR. Electronic system E can also receive signals, such as the regulating frequency, from switching regulator. At time  $t_0$  solenoid valve MV is switched on, by switching regulator SR or by micro-controller uC connecting the full supply voltage  $U_B$  to be switched off.

Since the initial voltage  $U_B$  impressed across the solenoid coil is considerably higher than its nominal (holding) voltage, solenoid valve MV is switched on very rapidly. Upper limit current  $i_3$  is not suitable for continuous operation of solenoid valve MV. Therefore, when limit value  $i_3$  is reached at time  $t_1$ , switching regulator SR, or micro-controller uC, switches supply voltage  $U_B$  off. When current  $i$  reaches a lower limit value  $i_1$  at time  $t_2$ , an on/off control cycle begins. That is, supply voltage  $U_B$  is switched on again until current  $i$  reaches holding limit value  $i_2$  at time  $t_3$ . At this time, supply voltage  $U_B$  is again switched off. Consequently, coil current  $i$  varies within the limits  $i_1$  and  $i_2$  in a holding operation state.

At time  $t_4$ , it is assumed that a mechanical shock impacts solenoid valve (MV) with sufficient magnitude to overcome the holding current force. This causes the solenoid armature to drop off from its switch on position. As a result, the air gap in the magnetic circuit of solenoid valve MV is increased which causes the magnetic circuit inductance to decrease. Consequently, this decreased inductance has the effect of increasing the switching frequency of holding current  $i_1$ ,  $i_2$ . This switching frequency increase is detected and measured by circuitry within switching regulator SR, or within electronic system E or within microcontroller uC in conjunction with measuring resistance  $R_M$ . The detected frequency value is then compared to a predetermined threshold value. If the detected frequency value exceeds the threshold value, an armature drop off is recognized. Upon recognizing an armature drop off, a new switch on impulse is generated.

Applicants respectfully disagree with the Office Action's statements that determining a duration such that the current does not exceed the threshold value "could simply mean you

don't exhaust your power supply.” Applicants’ claimed subject matter is directed to determining a time window so that a switching instant can be identified. Moreover, Lutz does not teach determining a duration of a time window such that a current flowing through the consumer during the time window does not exceed a threshold value as recited in claim 1. The Lutz reference also does not teach determining any type of time window, but simply refers to maintaining a holding current between  $i_1$  and  $i_2$ . Furthermore, in direct contradiction to the features of claim 1, in Lutz, a switching threshold is periodically exceeded as current  $i$  is regulated between values  $i_1$  and  $i_2$  through an on/off control cycle controlled by supply voltage  $U_B$ .

The Lutz reference also does not teach determining a switching instant at which the movable element has reached a particular position within the time window, as recited in the context of claim 1. Applicants respectfully disagree with the Examiner’s assertion that “any solenoid with a position sensor reads on the claims.” Claim 1 specifically recites determining a switching instant. While Lutz does assert that if a detected frequency value exceeds a threshold value, an armature drop off is recognized, this is not determining a switching instant, as recited in the context of claim 1.

It is therefore respectfully submitted that the § 102(e) rejections of claim 1 with respect to Lutz should be withdrawn, and that claim 1 is allowable. Claims 2-7 depend from and include all the limitations of claim 1, and are therefore allowable for the same reasons as claim 1. Thus, the § 102 rejections of claims 2-7 with respect to Lutz should also be withdrawn.

Claims 1-7 also were rejected under 35 U.S.C. § 103(a) as obvious over Lutz. For a claim to be rejected for obviousness under 35 U.S.C. § 103(a), not only must the prior art teach or suggest each *element* of the claim, the prior art must also suggest combining the elements in the manner contemplated by the claim. See Northern Telecom, Inc. v. Datapoint Corp., 908 F. 2d 931, 934 (Fed. Cir. 1990), cert. denied 111 S.Ct. 296 (1990); In re Bond, 910 F. 2d 831, 834 (Fed. Cir. 1990). The Examiner bears the initial burden of establishing a *prima facie* case of obviousness. See M.P.E.P. §2142. To establish a *prima facie* case of obviousness, the Examiner must show, *inter alia*, that there is some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify or combine the references and that, when so modified or combined,

the prior art teaches or suggests all of the claim limitations. See M.P.E.P. §2143. Applicants respectfully submit that neither of these criteria for obviousness are met here.

For the reasons stated above with respect to claim 1, Lutz does not teach determining a duration of a time window such that a current flowing through the consumer during the time window does not exceed a threshold value. The Lutz reference also does not teach determining a switching instant at which the movable element has reached a particular position. It is respectfully submitted, the Office Action simply has not demonstrated how these claim limitations are obvious over Lutz, since it simply does not teach or suggest any of the claimed elements and the Office Action has not referenced any known art that when combined with Lutz would render obvious the claimed subject matter. Thus, it is respectfully submitted that the § 103(a) rejections of claim 1-7 with respect to Lutz should be withdrawn.

Claims 1-7 were rejected under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Li. In particular, the Office Action raises arguments similar to those stated with respect to Lutz. The Li reference relates to an apparatus for detecting the position of an armature of a reluctance type electromagnetic sensor. The Li reference does not teach or suggest either of the claim features of determining a duration of a time window such that a current flowing through the consumer during the time window does not exceed a threshold value or determining a switching instant at which the movable element has reached a particular position within the time window. Thus, for the same reasons stated above with respect to Lutz, the § 102(e) and § 103(a) rejections of claims 1-7 with respect to Li should be withdrawn.

Claims 1-7 were rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Smith. In particular, the Office Action raises arguments similar to those stated with respect to Lutz. The Smith reference relates to an apparatus and method for sensing movement of a fuel injector valve of a fuel injection system, but it does not teach or suggest either of the claim features of determining a duration of a time window such that a current flowing through the consumer during the time window does not exceed a threshold value or determining a switching instant at which the movable element has reached a particular position within the time window. Thus, for the same or essentially the same reasons stated above with respect to Lutz, the § 102(e) and § 103(a) rejections of claims 1-7 with respect to Smith should be withdrawn.

Claims 1-7 were rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Moyers. In particular, the Office Action makes assertions like those stated with respect to Lutz. The Moyers reference relates to a method for determining the position of an armature of a dc-powered solenoid, but it does not teach or suggest either of the claim features of determining a duration of a time window such that a current flowing through the consumer during the time window does not exceed a threshold value or determining a switching instant at which the movable element has reached a particular position within the time window. It is respectfully submitted that the secondary Zimmerman reference makes plain that it does not cure the critical defects of Moyers. Thus, for the same reasons stated above with respect to Lutz, it is respectfully submitted the § 102(e) and § 103(a) rejections of claims 1-7 with respect to Moyers (whether taken alone or combined with Zimmerman) should be withdrawn.

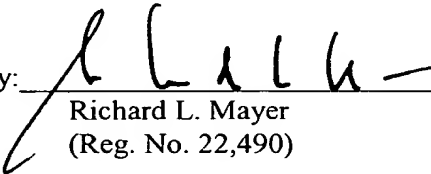
Claims 1-7 were rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Tauscher. In particular, the Office Action makes assertions like those stated with respect to Lutz. The Tauscher reference relates to a solenoid valve, but it does not teach or suggest either of the claim features of determining a duration of a time window such that a current flowing through the consumer during the time window does not exceed a threshold value or determining a switching instant at which the movable element has reached a particular position within the time window. Thus, for the same or essentially the same reasons stated above with respect to Lutz, the § 102(e) and § 103(a) rejections of claims 1-7 with respect to Tauscher should be withdrawn.

**CONCLUSION**

In view of all of the above, it is believed that the objections to and the rejections of the claims and specification have been obviated, and that claims 1 to 7 are allowable. It is therefore respectfully requested that the objections and rejections be withdrawn, and that the present application issue as early as possible.

Respectfully submitted,

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